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Preface

The topic of this special issue, the theory of formal languages, is very well motivated both by its long history and current importance. Indeed, formal language theory can be justly considered as the oldest branch of theoretical computer science. The work of an important forerunner, the Norwegian Axel Thue, dates back to the very beginning of this century. Afterwards, the need for a formal grammatical description of specific languages has arisen in very different contexts, making formal language theory a really inter-disciplinary area of science. The contexts have ranged from modeling natural and artificial languages to compiler construction, program verification, analysis of concurrent systems and modeling biological growth processes. An important very recent application area is DNA-computing, modeled by the language-theoretic constructs. During its by now already long history, the journal Theoretical Computer Science has been able to represent the various trends of formal language theory in a comprehensive and profound fashion.

As further tokens of the currently rising importance of the field of language theory we mention the newly established series of conferences "Developments in Language Theory", as well as the recent appearance of a three-volume major contribution, Handbook of Formal Languages. We feel that the present special issue fits very well in this general framework. Its eight papers represent structural and algebraic aspects of classical language theory. The first three papers (by Ito-Kari-Thierrin, Raz and Ilie) deal with the structured theory: operations and grammars. The remaining papers can be labeled as "algebraic". While the first three of them (by de Luca, Choffrut-Harju-Karhumäki and Maler-Staiger) fall into the general area of combinatorics on words and omega-words, the remaining two (by Honkala-Kuich and Honkala) deal with formal power series.

All contributions to this special issue, although originally on an invitational basis, have undergone the customary refereeing process. We would like to thank the contributors and referees for very good cooperation.

Grzegorz Rozenberg
Arto Salomaa

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